USSN: 10/570,227 Attorney Docket No.: 1059.00128

IN THE CLAIMS:

 (Currently amended) A fuzzy inference system for use in modulating radiation treatment, said system comprising:

single input fuzzifier means for inputting and optimizing singular imaging data and a physician's treatment intention including dose/volume constraints for critical organs, normal tissues, targets and compromising strategy between critical organs, normal tissues, and targets:

inference means operatively connected to said fuzzifier means, said inference means for analyzing the imaging data <u>and the physician's treatment intention</u> and determining radiation treatment target from non-treatment target; and

defuzzifier means for modulating radiation treatment pursuant to the analysis from said inference means.

- (Previously presented) The system according to claim 1, wherein said system is computer based.
- (Previously presented) A method of modulating radiation treatment by: inputting patient data into the fuzzy inference system according to claim 1; and modulating radiation treatment pursuant to data obtained from the fuzzy inference system.
- (Previously presented) The method according to claim 3, wherein said modulating step includes automatically modulating radiation treatment.
- (Previously presented) The method according to claim 4, wherein said modulating step includes automatically modulating radiation treatment via a computer.
- (Previously presented) The method according to claim 3, wherein said modulating step includes increasing the amount of radiation at a specified location.

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- (Previously presented) The method according to claim 3, wherein said modulating step includes decreasing the amount of radiation at a specified location.
- 8. (Previously presented) An apparatus for producing modulating radiation therapy in patients, said apparatus comprising:

an imaging device for creating and storing image data of relevant tissue and organ parts; and

a fuzzy inference system according to claim 1, said system operatively connected to said imaging device for modulating radiation treatment.

- (Previously presented) The apparatus according to claim 8, wherein said system is computer based.
- 10. (Currently amended) A fuzzy inference system for use in modulating radiation treatment, said system comprising:

single input fuzzifier means for inputting and optimizing singular imaging data and a physician's treatment intention including dose/volume constraints for critical organs, normal tissues, targets and compromising strategy between critical organs, normal tissues, and targets;

inference means operatively connected to said fuzzifier means, said inference means for analyzing the imaging data <u>and the physician's treatment intention</u> and determining strength of radiation treatment; and

defuzzifier means for modulating radiation treatment pursuant to the analysis from said inference means.

11. (Previously presented) The system according to claim 10, wherein said system is computer based.